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# “University of the People” – the third mission of Dagestan State University: an innovative approach to sustainability policy

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## Abstract

**Aim.** To develop an effective and innovative policy approach to Dagestan State University's third mandated mission to support sustainable community development by acknowledging and enhancing through specialist education the undervalued knowledge capital inherent in individuals and organizations throughout the community.

**Discussion.** Dagestan State University has 90 years of experience in providing support for the people of Dagestan in scientific research and higher education and is cognizant of the deep reservoir of community knowledge and competencies in articulating aspirations for sustainable development. On this basis, the university's Institute of Ecology and Sustainable Development is instituting an innovative community engagement program, the University of the People, to deliver effective scientific support for such development through co-creative collaborations which draw on and enhance community knowledge in the diverse regions of the republic. In consultation with the administration and community stakeholders of the alpine Tsumadinskiy district of the Dagestan Caucasus, through the present policy document a launch phase of the University of the People program has been formulated for 2022 which will provide year-long local vocational guidance to schools and an annual “Summer Field Faculty” which will undertake research, developmental needs analysis and offer in-service specialist training opportunities and support for local experts and administrations in implementing their desired sustainability initiatives. Following literature research and fieldwork in 2020-2021, the first outcome of the regional sustainability initiative, “Conserving the Koisu: Sustaining the Mountain Fastness of the Upper Andiiskoe River – A Uniquely Surviving Socio-Ecological Continuum in the Dagestan Caucasus”, has been completed

**Conclusion.** Implementation of the University of the People concept has the potential to effectively harness the vast resources of traditional knowledge of individuals and local bodies in regional sustainable development by providing communities with concrete support and interaction of university specialists and educators in ecology and sustainable development. It is hoped that the program will stimulate and enable members of the community to themselves attain tertiary qualifications in these fields, who, in turn, will create a future knowledge resource for continuing local applications of sustainable development principles. The concept has potential for application to other societies in the Caspian region which share similar histories and challenges.

## Key Words

Community development, community engagement, educational outreach, ecological and economic sustainability, professional development, Dagestan, Caucasus and Caspian regions.

# «Университет народа» – третья миссия Дагестанского государственного университета: инновационный подход к политике устойчивого развития

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## Резюме

**Цель.** Разработать эффективный и новаторский политический подход к выполнению третьей миссии Дагестанского государственного университета по поддержке устойчивого развития сообщества путем признания и повышения специального образования – недооцененного капитала знаний, присущего отдельным лицам и организациям во всем сообществе.

**Обсуждения.** Дагестанский государственный университет имеет 90-летний опыт оказания поддержки жителям Дагестана в научных исследованиях и высшем образовании, а также дает глубокие знания и умения обществу в области устойчивого развития и путей перехода к нему. Исходя из этого, Институт экологии и устойчивого развития Дагестанского государственного университета создает инновационную программу вовлечения сообщества. «Университет народа» обеспечивает эффективную научную поддержку для реализации этой программы посредством совместного творческого сотрудничества, которое опирается на знания сообществ в различных районах республики и расширяет их. По согласованию с администрацией и заинтересованными сторонами высокогорного Цумадинского района Республики Дагестан в настоящем программном документе сформулирована стартовая фаза программы «Университет народа» на 2022 год, которая обеспечит круглогодичную местную профессиональную ориентацию школ и ежегодный «Летний полевой факультет», который будет проводить исследования и анализ необходимых потребностей для развития, а также предлагать возможности обучения без отрыва от производства и поддержку местным экспертам и администрациям в реализации желаемых инициатив в области устойчивого развития. В 2020-2021 гг. был проведен анализ литературных источников и полевые исследования, которые дали свои первые плоды региональной инициативы в области устойчивого развития «Сохранение Койсу: поддержание устойчивости верховья реки Андийское Койсу – уникально сохранившийся социально-экологический континуум на Кавказе в Дагестане».

**Заключение.** Реализация программы «Университет народа» имеет потенциал для эффективного использования обширных ресурсов, традиционных знаний населения и органов местного самоуправления в региональном устойчивом развитии путем предоставления сообществам конкретной поддержки университетских специалистов и преподавателей в области экологии и устойчивого развития. Есть надежда, что программа будет стимулировать и позволит членам сообщества повысить квалификацию в этих областях, что, в свою очередь, создаст будущий ресурс знаний для постоянного применения принципов устойчивого развития на местном уровне. Программу «Университет народов» можно применять в других обществах Каспийского региона, которые имеют схожую историю и проблемы.

## Ключевые слова

Развитие сообщества, вовлечение сообщества, образовательная деятельность, экологическая и экономическая устойчивость, профессиональное развитие, Дагестан, Кавказ и Каспийские регионы.

## INTRODUCTION

*Background: The Concept of a Third Mission and the University of the People*

Dagestan State University (DSU) was founded in 1931 as a Teachers' Training Institute and achieved university status in 1957. It is of key significance for the Republic of Dagestan as its oldest and largest institution of higher learning. Through its official mandate the university provides a broad spectrum of educational programs and research which are key resources for the republic. DSU's



**Figure 1.** Graduate students from DSU's Institute of Ecology and Sustainable Development consulting with local residents when preparing the Ecological Passport for the Dakhadaevskiy District of south-eastern Dagestan



**Figure 2.** Graduate students from DSU's Institute of Ecology and Sustainable Development consulting with local residents when preparing the Ecological Passport for the Untsukul'skiy District of Dagestan. Photo by Yu.Yu. Ivanushenko

In this regard, Russian President Vladimir Putin has clarified directions in which national education requires particular attention, stressing the need to modernize the system of professional education and to achieve qualitative change in the preparation of students – with a particular focus on knowledge and skills underpinning technological development. In this context, he has stated the necessity of providing applied degree qualifications for working occupations that require an educational background (e.g. in engineering) as well as the creation of centres providing advanced learning opportunities for working citizens.

Dagestan State University considers that it has three core missions to the people of the Republic of Dagestan:

- Mission 1 – Education
- Mission 2 – Research (Science)
- Mission 3 – Community Engagement.

All are interrelated and are of fundamental importance to the maintenance and growth of a healthy, robust society. While it has made major contributions over the years of its existence as a research and teaching institution, the university faces significant challenges in responding in sustainable ways to community development and income generation needs in a transformational era of globalization and rapidly evolving technologies.

*The University of the People: Harnessing the Strength of Community Knowledge Resources in Sustainable Development*

The university is thus embarking in an innovative spirit in responding to the demands of its third mission, Community Engagement, through the "University of the People" initiative. This initiative is centred in the understanding that throughout the Republic of Dagestan there is a multitude of existing human knowledge resources aggregated in local

fundamental responsibility is to ensure citizens and residents the delivery of a diversity and depth of higher and further education and research opportunities necessary for the functioning and development of a healthy, knowledge-based society. It represents a primary state investment in social and human capital necessary to underpin a sustainable economy, the maintenance of desirable levels of employment and the viability of the unique character of the republic itself (Figs. 1, 2).

communities and entities of various kinds which have great potential to contribute to sustainable regional development (and thus national development), if effectively supported and coordinated within the framework of the concepts of the Green Economy.

Human knowledge resources in Dagestan range from specialists with deep traditional knowledge of agriculture, animal husbandry, trades and crafts, local teachers and scholars who are avid and reliable observers of their community life and their relationship with their natural environment, local entrepreneurs engaged in the realities of building reliable incomes based on the provision of services to visitors (e.g. through ecological and cultural tourism), clerics with a deep knowledge of key issues of concern to their congregations to local municipal and district administrations who are thoroughly versed in the realities of responding to key sustainability issues in their territories. The majority of Dagestan's territory consists of mountains and associated piedmonts which constitute integrated eco systems (indeed the republic's name means "Land of Mountains"), its inhabitants living in rural villages and small towns pursuing mostly traditional agriculture and pastoralism, supported by local service industries.

Most of its urban population is concentrated in the capital city of Makhachkala and in Kaspiysk, Khasavyurt, Kizlyar, Izberbash and Derbent which are centres of essential services, business, trading and small industries serving their regions. There are strong personal family and business connections between those living in these cities and those living in the countryside where so many Dagestanis have strong family roots. Active personal links and ubiquitous access to modern communication technologies across the republic mean that its rural inhabitants are generally as well informed about issues

relating to development and resources as the urban citizenry.

Though possessing a wealth of knowledge and expertise, these community level resources have long been insufficiently understood or acknowledged as reliable and competent drivers of collaborative development or under-supported in both policy and financial terms at higher levels of government.

“The University of the People” concept is based on the recognition of these vast and under-utilized community competencies and reservoirs of knowledge and aims at the co-creation of educational mechanisms to help grow sustainable regional economies – in essence by enabling a university of the people by the people.

In terms of identifying and articulating local sustainable developmental needs, it is critically important to acknowledge that throughout the regions of Dagestan local citizens are the real experts in respect of their home territories and are fully able to articulate their needs. Besides drawing on rich popular reservoirs of local traditional knowledge, this expertise is also to a considerable degree the outcome of the specialist higher education received by many locals who are graduates of DSU and other Russian institutions of higher learning, who have returned to live in their home communities or maintain a close emotional links with them while living elsewhere. What they seek above all is to be heard and provided with access to expert technical or scientific advice in implementing solutions to their requirements through committed official state management or investment support.

Too often innovative and viable proposals or needs expressed on the local regional level have withered without encouragement or tangible support higher up the bureaucratic system; creative energies naturally dissipate in such an environment

This is where the “University of the People” initiative is intended to make a difference in community development by strengthening popular expertise by bringing educational support to facilitate and enhance the ability to effectively implement solutions at the community level. This should be done in a visible way with a commitment to collaborative assistance and practical follow-through.

Among the myriad of publications relating to the concept of a “third mission” for universities, Campagnucci and Spigarelli have provided an excellent analysis of a range of related programs already instituted internationally [1]. Most of these, however, focus on the concept of increased generation of revenues through coopting the advanced knowledge and capabilities of universities – without accounting for environmental impacts. However, the policy approach of DSU is fundamentally different in that it considers that there can be no state university community development engagement responsibly labelled as ‘Third Mission’ in a functioning traditional society which has a limited capitalist developmental infrastructure or mindset in the western sense (e.g. the post-Soviet economy of Dagestan) without an inbuilt concern for sustainable environmental management and without acknowledging the depth of knowledge inherent in the community itself.

DSU’s approach is not entrepreneurial and primarily driven by economic considerations but lies within the counter concept of the third university mission which perceives sustainable community development as being

the primary driver and is informed by societal requirements and demands [2]. The university responds through reciprocal community engagement in activities that are inclusive of civil society and focus on social justice and the promotion of sustainability [3-9]. DSU’s policy reflects the vision expressed by Trencher et al of a university engaged with diverse social actors in co-creating social transformations in pursuit of materializing sustainable development in a specific location, region or societal sub-sector. It does so by incorporating sustainable development and place-based co-creation with government, industry and civil society [10].

That is to say that in the model of DSU’s University of the People knowledge transfer is both equitable and cyclical. Knowledge cycles from the community to the university and from the university back to the community and so on.

#### *The “University of the People” and the Institute of Ecology and Sustainable Development, Dagestan State University*

The “University of the People” concept in the context of sustainable development revolves around the beneficial complementarity of the knowledge inherent in local communities and the knowledge inherent in institutions of higher education. They should be recognized as of equivalent value and be mutually supporting. In this dynamic, community-based knowledge informs learning in primary, secondary and tertiary level education which leads to the development of graduate specialists who in their turn enhance the knowledge base and competencies of the communities from which they came.

The concept has grown out of the experiences and observations of the Institute of Ecology and Sustainable Development of Dagestan State University in interacting with local communities in the course of its activities. Without these communities’ intimate knowledge of their environment, little could have been achieved in formulating solutions. A prominent example of such collaboration has been the Institute’s examination with detailed input from the fishing communities along the northwestern coast of Dagestan into the causes of the decrease in populations of the Caspian seal. This ultimately resulted in the inclusion of the Caspian seal in the Red Book of the Republic of Dagestan and the Russian Federation in 2020 as a key strategy for marine biodiversity sustainability and the development of a Centre for the Rehabilitation of the Caspian Seal (Figs. 3-6).

Another has been the successful rehabilitation of the natural environment and fisheries resources of the Lake Adzhi-Papas wetlands in south-central Dagestan (Figs. 7, 8). The Institute is also current engaged with the community of Verkhnee Gakvari in the upper reaches of the Andiiskoe Koisu (River) in the alpine Tsumadinskiy District of Dagestan in documenting and supporting their exemplary 50 year long program of local ecological conservation and regional advocacy forums conducted largely through their public school [11] (Figs. 9-11).

In modern conditions of climate change and deleterious anthropogenic impacts on the environment, where it is clear that scientific education in environmental sustainability is becoming a fundamental strategic resource for development, the Institute of Ecology and Sustainable Development of Dagestan State University sees its mission in training highly qualified specialists not only in the Republic of Dagestan but also through multilateral interaction with leading universities and scientific

institutions of the region, taking into account the requirements of the Tehran Convention (the Framework Convention for the Protection of the Marine Environment of the Caspian Sea), the strategies of the United Nations Environmental Programme and its own experience in the Caucasus and Caspian in environmental risk management and sustainable development procedures. During its history, apart from its many specialists who have

graduated at the master's level since its establishment as a faculty in 1998 (Institute from 2015), the Institute of Ecology and Sustainable Development has trained more than 40 doctors and candidates of biological sciences, including those from other higher educational institutions and scientific organizations of the North Caucasus and Southern Federal Districts.



**Figure 3.** Specialists from the Institute of Ecology and Sustainable Development in dialogue with fishermen at the fishing port of Briansk, situated on a narrow coastal channel in northeastern Dagestan



**Figure 4.** Rescuing a stricken Caspian seal for care in rehabilitation centre. Izberbash, Dagestan



**Figure 5.** Documenting remains of Caspian seal trapped in fishing net washed up on the beach at Briansk, north-eastern Dagestan



**Figure 6.** Caring for a wounded seal in the Aqua Complex of Dagestan State University, Makhachkala



**Figure 7.** Aerial view of the rehabilitated wetlands and new accommodation, nature-watching and fishing facilities for visitors to Lake Adzhi-Papas. South-central Dagestan



**Figure 8.** Lake Adzhi-Papas has become a favored venue for community fishing competitions. A group of fisherman from the Russian Geographic Society competing in the April 2018 Dagestan Fishing Championship



**Figure 9.** Village of Verkhnee Gakvari in the headwaters region of the Andiiskoe Koisu (River), Tsumadinskiy District, whose school teachers are collaborating with the Institute of Ecology and Sustainable Development in assessing the sustainable development potential of the district



**Figure 10.** Verkhnee Gakvari. A group of students and other villagers gathered for a tree planting subbotnik. The saplings they are holding were grown at the school



**Figure 11.** Participants at the 2017 community-initiated conference at Agvali, Tsumadinskiy District, Dagestan – “Ecology of the Mountain Districts of Dagestan: Problems and Pathways to Their Solution”. Organised by specialist staff of Verkhnee Gakvari School

A major partner of the Institute of Ecology and Sustainable Development is the Mountain Botanical Garden of the Russian Academy of Sciences in Gunib, Dagestan, whose dedicated scientific research facilities are specifically engaged in contributing to the sustainable exploitation of natural resources in high mountain regions of the Caucasus.

All this activity has made it possible to consolidate through the state education system the entire structure of professional training of specialists in the field of ecology and nature management with competencies aimed at meeting all the related requirements and challenges facing the republic.

Currently, graduates of the Institute of Ecology and Sustainable Development work in a range of state environmental organizations, including the Ministry of Ecology and Natural Resources of the Republic of Dagestan,

the Dagestan Centre for Hydrometeorology and Environmental Monitoring, the Caspian Zonal Research Veterinary Institute, the Dagestan Federal Research Centre, the Junior Academy of Sciences of the Republic of Dagestan, JSC ChirkeyGESstroy, the Federal State Budgetary Institution for Water Management, Dagvodresursi, as well as administrations of cities and municipalities throughout the Republic of Dagestan.

The Institute of Ecology and Sustainable Development also has a special focus on the care of the cultural heritage in a society which is still closely linked to the land and, through strongly held Islamic religious beliefs, respectful of the natural world. In this regard the Institute is now working in close cooperation with specialists from the State of Qatar, through the Arabic Cultural Heritage Research Program at the newly established Dagestan-Qatar

Scientific-Education Centre at Dagestan State University, which it manages.

The Institute also provides authoritative, independent advisory support to state regulatory processes in situations where environmental issues are in contention (Fig. 12). The coordination of approaches to threats to Caspian marine ecosystems is of major concern in this region where littoral jurisdiction and management is

distributed among five individual states (the Russian Federation, Azerbaijan, Kazakhstan, Turkmenistan and Iran) and where problems range from understanding how best to address the challenges of the deposition of plastic waste, the conservation of the declining population of the iconic Caspian Seal, sustainability of traditional fisheries and the impacts of pollution from commercial fossil fuel extraction activities.



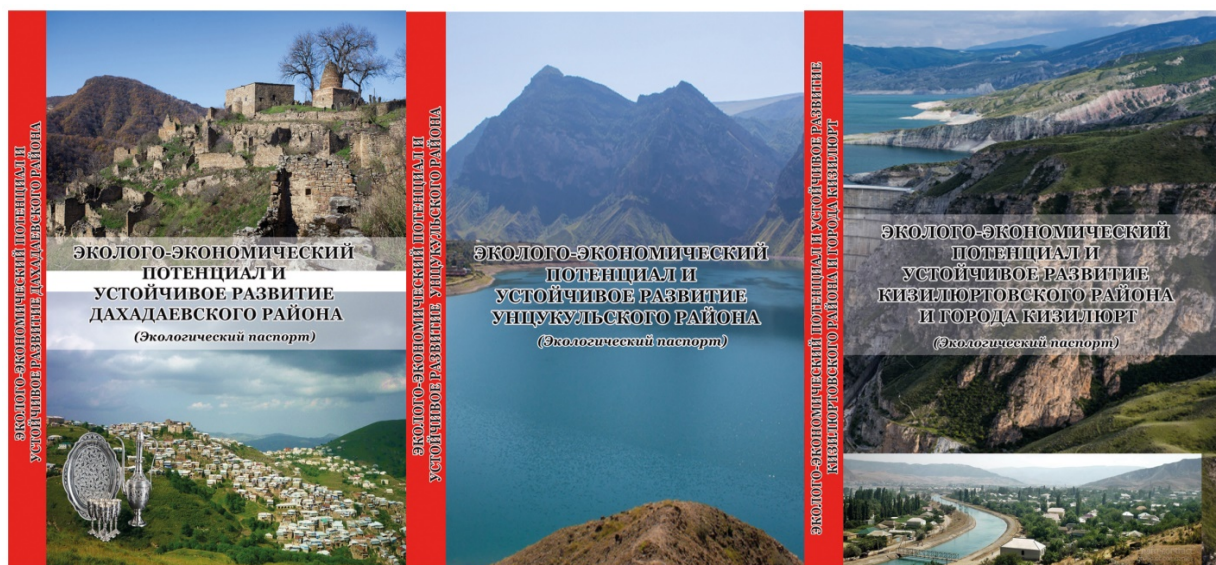
**Figure 12.** On-site consultation with local officials about environmental reservation regulations related to a projected new by-pass through a protected highland area west of the historic Naryn-Kala Fortress to relieve transit traffic pressures in the city of Derbent, southern Dagestan. Inset: Protected nature area behind fortress.

In the latter context, the Institute has recently completed for the Russian federal government an extensive, in-depth report, "Development of methods for the integrated monitoring, assessment and conservation of biological diversity and predictive calculations of the likelihood of damage to ecosystems of the coasts and waters of the Middle Caspian following an accidental discharge of oil on shelf fields".

The Institute believes that just as climate knows no borders, so education should know no borders and is an active member of the Association of Universities of Caspian Region States, heading the association's own Institute of Ecology and Sustainable Development. As such it is closely collaborating with the United Nations Environmental Programme (UNEP) through the mechanism of the Tehran Convention Secretariat in Geneva in developing educational opportunities aimed at developing a cadre of promising young scientists from across the Caspian region with common, shared competencies and knowledge of one another. An innovative two-year bilingual (Russian-English) Master of Environmental Science Program – "Managing the Challenges of Environmental Management and Sustainable Development in the Caspian Region" is planned when regional communications are re-opened post the COVID-19 pandemic.

Another innovation in terms of the sustainable management of the various regional environments in which the citizens of Dagestan live is the program for allocating electronic ecological passports to municipalities in Dagestan, which is being implemented by Dagestan State

University. According to the Resolution of the Government of the Republic of Dagestan No. 360 dated December 25, 2015 "On the implementation of priority development projects of the Republic of Dagestan in 2016", Dagestan State University was identified as one of the executors of the priority project "Effective Public Administration" within the framework of which it was planned to create electronic environmental passports for the municipalities of the Republic of Dagestan and to combine the associated data into a single electronic database. Through this program available medical, statistical and environmental information is gathered and evaluated in order to identify the leading environmental factors relating to Dagestan's districts, to determine trends in environmental change and to propose, on this basis, recommendations for improving the environment and preserving the health of the population. This also allows scenario modeling of the development of the socio-economic system of each district from the standpoint of its sustainability. To date, the university has already successfully completed and compiled pilot environmental passports for the mountainous Dakhadaevskiy, Kizilyurtovskiy and Untsukul'skiy Districts [12-16] (Figs. 1; 13-18). This kind of complex research and evaluation is being undertaken for the first time in Russia and is in conformity with President Putin's declaration to the Federal Assembly that "Despite the uniqueness and richness of Russian nature, its state today can hardly be called absolutely favorable. This problem can be solved only by creating a modern effective management system in the environmental sphere."



**Figure 13.** Ecological Passports for the Dakhadaevskiy, Untsukul'skiy and Kizilyurtovskiy Districts, Republic of Dagestan (2016)



**Figure 14.** Graduate students of DSU's Institute of Ecology and Sustainable Development engaging local residents in gathering viewpoints for the Ecological Passport of the Dakhadaevskiy District



**Figure 15.** Graduate student of DSU's Institute of Ecology and Sustainable Development in consultation with a local resident in preparing the Ecological Passport of the Dakhadaevskiy District



**Figure 16.** Graduate student of DSU's Institute of Ecology and Sustainable Development in consultation with a local resident in hospital in preparing the Ecological Passport of the Dakhadaevskiy District. Photo by Yu.Yu. Ivanushenko



**Figure 17.** Staff member of DSU's Institute of Ecology and Sustainable Development in consultation with a local official in the process of preparing the Ecological Passport of the Dakhadaevskiy District



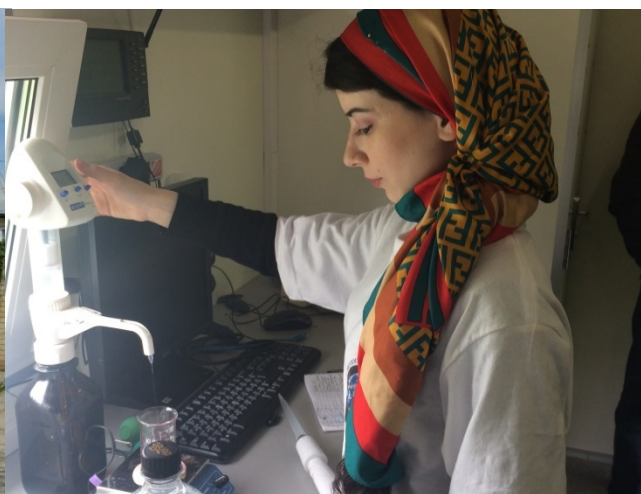
**Figure 18.** Graduate students of DSU's Institute of Ecology and Sustainable Development in consultation with a local resident in preparing the Ecological Passport of the Dakhadaevskiy District, Dagestan

The university has also launched a program for compiling small ecological passports for schools in districts and cities of the Republic of Dagestan. This is a very significant project. In each school of the republic, water samples will be taken for complete chemical analysis from drinking water supply sources directly on the territory of the schools, soil samples will be taken from the territory adjacent to the school, as well as collection for the study of

the microelement composition of the hair of schoolchildren and teachers of different age groups. All studies will be carried out using modern physical and chemical methods of quantitative chemical analysis approved in accordance with the established procedure for monitoring and environmental control at DSU's Environmental Monitoring Laboratory at the Institute of Ecology and Sustainable Development (Figs. 19, 20).



**Figure 19.** Mobile Environmental Monitoring Laboratory of the Institute of Ecology and Sustainable Development, Dagestan State University in use in the Dakhadaevskiy District. This enables scientific analyses to be carried out directly within the territories of regional communities and for local visitors to observe and discuss the process



**Figure 20.** Carrying out a water analysis in the Mobile Environmental Monitoring Laboratory

## DISCUSSION

### *Engaging School Children in Environmental Conservation and Sustainability*

In the Russian primary school curriculum, "The World Around Us" is a core subject which helps to sensitize all youngsters to our living environment. The Institute of Ecology and Sustainable Development builds on this by providing a range of activities to further engage school

students to the science of ecology and the protection of our environment. These include special open days for children when they can visit the institute and see exhibits and hear from teachers and students what it is that they do. Perhaps they may be stimulated to study these subjects as they grow up. The Institute's activities also include external school classes and visits, workshops and excursions with children (Figs. 21, 22).



**Figure 21.** Class on the care of the environment being taught in a Makhachkala school by a specialist from the Institute of Ecology and Sustainable Development



**Figure 22.** Students in class on the care of the environment at a Makhachkala school



**Figure 23.** Students participating in a gardening workshop given by the Institute of Ecology and Sustainable Development



**Figure 24.** School students in drone construction workshop organized by DSU's Institute of Ecology and Sustainable Development



**Figure 25.** Drones of DSU's Institute of Ecology and Sustainable Development being prepared for an in-service training program

It is active in support ecologically-related activities, such as the proper preparation and planting of gardens (Fig. 23). A popular venture has been a workshop on drone construction for children (the Institute itself has a fleet of advanced surveillance drones which it uses in heritage and ecological surveys) (Fig. 24, 25). Supporting awareness of the plight of the Caspian seal (which was once a common sight for swimmers at Makhachkala's city beaches) have been events such as the art class held at the Russia – My History museum, where students were provided with

easels and painting and drawing materials to depict seals (Figs. 26, 27). Classes of school children are also often taken to the city beaches to participate in the clean-up of plastic marine waste which defaces the shores – reinforcing their awareness of the need to properly dispose of plastic waste and to use recyclable materials in daily life where possible. (Fig. 28) Classes in the English language have been provided through private Dutch sponsorship at the Internat School for Orphans and Children without Parental Support in Makhachkala. (Fig. 29)



**Figure 26.** Seal Conservation Awareness Art Class at the Russia-My History Museum in Makhachkala, Dagestan



**Figure 27.** Participant in Seal Conservation Awareness Art Class at the Russia-My History Museum in Makhachkala, Dagestan



**Figure 28.** Students and faculty of the Institute of Ecology and Sustainable Development participating in a beach clean-up in Makhachkala



**Figure 29.** Students and teachers in an English language class at the Internat School for Orphans and Children without Parental Support provided by the Institute of Ecology and Sustainable Development with Dutch sponsorship

#### *Community Concerns in Student Career Selection and Viable Employment following Graduation*

It is evident that a key and pressing strategic concern of Dagestan State University as an institution so centrally placed at the heart of the republic's stability and growth must be to effectively engage communities in addressing an overriding preoccupation of the vast majority of its students – how to secure viable employment in Dagestan after graduation.

At the personal and community level, school leavers and their parents in Dagestan are often in a quandary as to which higher education specialization to select which will both match a student's own career interests and is likely to lead to productive employment following graduation. Through the "University of the People" initiative DSU will engage regional communities in

identifying local long term specialist human resource needs and provide locally-specific vocational and career guidance in secondary schools. The latter directions will be facilitated by sponsoring visits to primary and secondary schools by sending selected postgraduate students to inform and inspire pupils about the career choices they have made and are finding satisfying.

In this regard it is important to note the considerable current state investment in quality new school facilities in remoter areas of the republic, an investment strongly supported by local communities which are experiencing depopulation because of insufficient employment opportunities and who are hopeful that in the longer term education will be the key to their future re-invigoration and sustainability.

A related concern within certain faculties and institutes of the university is that the secondary school system in the republic is not producing a sufficient pool of candidates for university places with the prerequisite level of education or subjects studied. The result is reduced student intake – potentially inadequate to justify continuance of certain course offerings and thus with serious current or future implications for the viability of specialist educational offerings. Without a pool of adequately intellectually prepared students to draw upon an institution of higher learning has no practical foundation, it cannot effectively provide tertiary level education. A particular example is experienced by the Institute of Ecology and Sustainable Development of Dagestan State University because geography, which it considers as a basic knowledge platform for its courses, is no longer taught as a separate subject in many state schools.

Resolution of this dilemma of both inadequate pre-university preparation and uncertain employment prospects after graduation requires a process of thorough internal review and of dialogue between all concerned stakeholders and responsible parties. A solution might be DSU's establishment of a preparatory year prior to full university education within a "college" format. Although such a corporate structural innovation would be resource intensive in its establishment and operation, it could also provide an additional benefit to DSU through providing supplementary preparatory courses for foreign students, e.g. in English and Russian, as well as in specialist foundation competencies desirable for enrollment in particular faculties and institutes.

Dagestan State University, as a core republican-oriented state institution of higher education utilizing public funds, has a social responsibility to constructively engage in creating pathways for its graduating students to have a reasonable possibility of ongoing and productive employment and a living wage. Further precisely-targeted research and innovative thinking and planning are required, including investigating the potential and implications of correlating student intake in specific fields with actual predicted employment opportunities and socio-economic requirements for the republic's sustainable growth. Producing a glut of qualified young graduates in an already saturated employment sector contributes neither to a healthy economy nor to community well-being. The common practice across a broad range of sectors in Dagestan of graduates securing employment not primarily on the basis of merit and competence but on the basis of "who you know" also has a significant demoralizing and de-energizing influence on student outlooks and prospects and negatively affects many of those contemplating entering higher education.

Much could be done by engaging all stakeholders – in education, in the professions, in public administration and in corporate leadership – in a dialogue to address these issues and to attempt to reach constructive consensus towards healthier employment environments in Dagestan. In terms of sustainable development in Dagestan's rural districts it is particularly important to attempt to provide students with both career advice and future local employment pathways which could allow them to return and so reduce the detrimental consequences of migration to urban centres in search of a livelihood.

A positive current factor in this regard is that the state is currently investing considerably in the construction of high quality new schools with the strong support of local communities who believe that a good education will ultimately be the key to future population stability and

provide the basis for the reinvigoration and sustainability of their local economies.

Closely related to the above factors is a gender-related phenomenon. In some fields DSU is producing a disproportionately larger percentage of female postgraduates than males – with no clear avenues to maximize the future potential of these well-educated women when they have completed their studies and in whom the state has invested substantially. Young women with excellent professional master's level or joint specialization degrees yearn for career advancement and the productive application of their knowledge but are discouraged by the obstacles they face through certain entrenched societal attitudes and business structures. Many simply dissipate into the community to become educated young mothers – indeed a most valuable role – but have no pathways to integrate their skills beneficially within the broader community as life progresses.

#### *Growing Opportunities for Further Education and Life-long Learning*

Building on the basis of Dagestan State University's existing commitments and investments in these domains, the institution will expand its outreach and support for the community in further education and life-long learning through innovative programs of courses and workshops aimed at assisting individuals in acquiring new knowledge and skills for work, profit or purely personal fulfillment.

In the spirit of the concept of a university of the people by the people, local teachers with knowledge of specialist subjects of particular interest to their local communities will be assisted in contributing to the further education process.

Successfully implemented, this strategy also has the potential of stimulating "a want to learn culture" (already a noticeable characteristic of Dagestani citizen's generally) and thus to catalyze increased enrollments in tertiary education in Dagestan.

These offerings will support President Putin's current call for the creation of in-service educational opportunities for "working citizens". They will be of varying lengths, ranging from a single evening or weekend to those requiring attendance weekly throughout a semester. Some of these suggested programs are mutually supportive. Special summer programs are also envisaged.

Courses are proposed to provide further education in the following categories:

- Know our Dagestan – Become a Tourist Guide
- Sustainable Tourist Development
- Trade and Commerce: Doing Business with Neighbouring Countries
- Small Business Development and Management Skills
- Skills for Engaging with the Community
- Acquiring Advanced Computer Competencies
- Sustainable Agriculture

The above courses will provide information about available government assistance where relevant, e.g. the Presidential Grants Programme.

This community further education stream could include paid conferences and workshops of one or two day's duration to enhance the republic's capacity in sectors which have particularly high developmental potential.

#### *Increased Opportunities for Part-Time Education*

An unanticipated outcome of the pandemic has been the increased investment by Dagestan State University in the development of on-line education. This will be put at the service of greater access to part-time education to

encourage Dagestanis, particularly those who are in full-time employment or live away from the university's campuses, to study for specialist university qualifications.

It is intended to develop regionally-specific courses in consultation with regional communities.

*Support Professional Development in Dagestan through In-Service and Advanced Learning Courses*

Dagestan State University is positioned as a significant resource to develop and provide periodic in-service professional development and advanced learning courses required of professional specialists in both public and private sectors to maintain their competencies, keep abreast of developments in their fields of expertise and to upgrade their personal resumes. Such courses can be provided on a gratis or contract basis to government entities (e.g. refresher courses for teachers or refresher and advanced learning programs tailored for specialists within commercial sectors which are currently expanding in the republic) and may also be delivered online as distance education (in Dagestan and beyond). The main requirement for students to participate in an advanced training course is having a higher or secondary vocational education.

The quality of advanced training is ensured by the highly qualified teaching staff of DSU, other leading universities of the Russian Federation, as well as by practitioners, using modern educational technologies. Upon completion of the courses, a certificate of professional development is issued.

Three such advanced learning courses were developed and delivered by the DSU's Institute of Ecology and Sustainable Development in 2020, as follow:

- "Software processing of remote sensing materials: Land and thematic mapping in modern geographic information systems".

The program is designed for the acquisition of knowledge and practical skills by state and municipal officials, specialists in the field of nature management and engineering and technical workers in the field of applied use of materials for remote sensing of the Earth. In the learning process, the theory and practice of thematic

mapping in modern geographic information systems using remote sensing materials are considered in detail. The competencies acquired by students in the learning process will contribute to the successful solution of a range of problems of land use and territory management using remote sensing data, including real estate, water resources, transport, engineering communications, agriculture and forestry, security and environmental monitoring problems, etc.

- "Environmental protection and environmental safety".

This program is designed to form competencies in the field of ensuring environmental safety, preventing threats from activities that can have a negative impact on the environment, degradation of biological diversity; advanced training of managers and specialists of economic entities or other activities that have or may have a negative impact on the environment, in order to update their theoretical and practical knowledge in connection with the increased requirements for the level of qualifications and the need to master modern methods of solving professional problems in the field of environmental protection environment, rational nature management and ecological safety.

- "Environmental and technological foundations for the optimization of modern branches of agricultural production".

The program is designed for the acquisition of professional competencies necessary for the implementation of new ideas and technologies that take into account the specifics of agro-ecological conditions, selection achievements and modern technologies of intensive agricultural production. It is focused on the acquisition of knowledge and practical skills by specialists from state, municipal and private agricultural enterprises, regional agricultural departments, the Ministry of Agriculture and those with personal subsistence plots and engaged in agricultural greenhouse production. A special workshop on this subject was provided at the request of the Muslim Spiritual Administration of Dagestan for imams of rural regions as advocates for sustainable agricultural practices (Fig. 30).



**Figure 30.** Imams representing rural congregations in Dagestan participating in special course on Environmental and Technological Foundations for the Optimization of Modern Branches of Agricultural Production held in the conservatory of the Institute of Ecology and Sustainable Development, Makhachkala in December 2020

#### *Collaboration with Local Municipal and District Administrations*

The “University of the People” initiative understands that the personnel and planning deliberations of local municipal and district administrations constitute an extremely valuable knowledge base for regional sustainable development and should be consulted in developing any regional educational assistance programs. Their meeting and presentation facilities also are potential venues for collaborative workshoping aimed at identifying core local development issues and for the holding of training courses.

#### *Utilisation of Local School Facilities and Teacher Knowledge and Competencies*



**Figure 31.** Speakers at the 2010 Scientific-Practical Conference, “Ecological Problems of the Tsumadinskiy District and Pathways to Their Solution” in Verkhnee Gakvari, organized by the Director of the community’s school

As emphasized above, the local knowledge and skills of teaching staff in rural regional communities and school facilities are a key resource in developing and providing the range of community development outreach programs which make up the “University of the People” Initiative (Fig. 31).

#### *Collaboration with the Religious Community*

A fundamental knowledge resource in understanding local community development issues are the imams of settlement juma’ats (religious congregations) whose input should be sought in any sustainable development assessment and planning (Fig. 32).



**Figure 32.** Mavlid (celebration of the birth of the Prophet Muhammad) at Mutsuaul, Tsumadinskiy District. In a region with a strong faith community, Islamic doctrines protecting the environment have been a major contribution to supporting the sustainable agro-pastoralism long practiced there

#### *“University of the People” – Launch Phase: “Summer Field Faculty” Tsumadinskiy District & the “Conserving the Koisu” Project*

Dagestan State University, through its Institute of Ecology and Sustainable Development, will be launching an initial three-year launch phase of the “University of the People” initiative in the high Caucasus Tsumadinskiy District in 2022 in the form of a “Summer Field Faculty” to be conducted in tandem with the university’s “Conserving the Koisu” socio-ecological sustainability project which has already been formulated and is underway. It is intended that the achievements and lessons learned in the Tsumadinskiy “University of the People” project will serve as to create a model for application by the university to extend the concept to other districts of the republic. The Ministry of Tourism and Ministry of Education will collaborate in the initiative, together with the Tsumadinskiy District administration.

#### *Tsumadinskiy District & the “Conserving the Koisu” Project*

Three interconnecting rivers systems (Koisu) drain the inner massifs of the south-west of the Dagestan Caucasus. The project, “Conserving the Koisu: Sustaining the Mountain Fastness of the Upper Andiiskoe River – A Uniquely Surviving Socio-Ecological Continuum in the Dagestan Caucasus”, is directed at important conservation and sustainability issues concerning the headwaters region of the most remote of them, the Andiiskoe Koisu, whose waters slice a dramatic course amongst towering snowy ranges, still being sculpted by remnants of the glaciation

which covered much of the high Caucasus during the Last Glacial Period (Fig. 31).

Here, as climatic conditions subsequently ameliorated, a complex of glacial and post-glacial high altitude landforms provided a home for a rich and diverse range of alpine and subalpine flora and fauna which characterize the region today. Man (having survived in the glacial refugia provided by the adjacent lowlands of Transcaucasia, where the first hominins recorded in Eurasia had already appeared some 1.8 million years ago) was to return to hunt and forage and find a uniquely compatible ecosystem, sheltered by its geomorphology from outside intrusion and blessed by nurturing microclimates and bounteous soils. By some 6,000 years ago Neolithic man was optimizing a range of fertile bio-niches for permanent habitation on the basis of high altitude cereal-based agriculture and stock-raising, maximizing the benefits of what nature had to offer and in symbiosis and co-evolution with it.

Within this world of majestic and humbling canyons and crags and vast pine forests, a number of small agro-pastoral enclaves speaking distinct local languages, have co-existed and flourished side by side in their individual bio-niches for millennia without displacement or significant external disruption to the present day. Together these communities of the upper Andiiskoe Koisu (now the territory of the Tsumadinskiy District) present a unique cultural continuum in which evidences of its principal evolutionary phases remain accessible to scientific and historical research. In essence we have before us a largely

unexplored and undisturbed, living laboratory of human societal engagement with the natural environment. This remarkable continuity is of global significance for

understanding the evolution of human society and presents a unique survival in Europe of successful and harmonious socio-ecological interdependencies.



**Figure 33.** Tsumadinskiy District [insert]. View east from the Snegovoy Ridge across the valley of the Gakvarinka River and the territories of Verkhnee Gakvari [village in black box] and Nizhnee Gakvari to the Andiiskoe Koisu and the Bogossky Ridge, whose highest peak is Addala-Shukhgelmeer (4,150 m) with its five glaciers

As the combined impacts of modern society and climate change now inevitably impinge upon the ability of the inhabitants of this ancient homeland to sustain the benefits which they have so successfully learned to craft from their environment throughout millennia, the region is in priority need of national and international recognition and support.

To this end the Caspian Centre for the Protection of Nature of the Institute of Ecology and Sustainable Development, Dagestan State University (DSU), in partnership with communities of the Tsumadinskiy District of the Republic of Dagestan and with the endorsement and support of the relevant republican and federal agencies, are implementing a community – centred project to record, conserve, promote and sustainably exploit the heritage resources of the headwaters region of the Andiiskoe Koisu as the basis for much-needed income generation for the region's population.

This project is one of an inter-related suite of planned initiatives emanating from the newly-created Dagestan-Qatar Scientific-Educational Centre at Dagestan State University. It is being undertaken in commemoration of the 100<sup>th</sup> anniversary of the declaration of the Dagestan Autonomous Soviet Socialist Republic (DASSR) and will be implemented within the framework of the concepts of the International Partnership for the Satoyama Initiative [17].

The International Partnership for the Satoyama Initiative (IPSI) was established in 2010, during the 10th Conference of the Parties to the Convention on Biological Diversity held in Nagoya, Japan. This international effort vigorously promotes activities consistent with existing fundamental principles represented by the Ecosystem Approach – a way to manage entire ecosystems based on the awareness that all components (including ourselves) are interconnected.

The core vision of the International Satoyama Initiative is the support of societies in harmony with nature through conservation and sustainable use of biodiversity in an equitable way. This is achieved when the socio-economic activities of human communities align with natural processes. An example is provided by the small linguistic enclaves of the alpine headwaters region of the Andiiskoe Koisu which have managed to achieve this balance for some 6,000 years without radically destructive, internal or external disruption.

By managing and using biological resources sustainably and thus properly maintaining biodiversity, humans can contribute to the potential stable supply of critical natural and economic benefits well into the future. Through a system of case studies prepared for the International Satoyama Initiative, successful co-evolved relationships between humans and nature in what are now referred to as “socio-ecological production landscapes” are made available for international review as functioning models, as well as for local and national practical and policy application.

However, these landscapes – and the sustainable practices and knowledge they represent – are increasingly threatened in many parts of the world, due for example, to urbanization, industrialization and rapid rural population increase or decrease and, increasing, the anthropogenic impacts of increasing climate change. Measures are urgently needed to conserve sustainable types and models of human-influenced natural environments through deeper, systematic scientific understanding of their dynamics and a broader global recognition of their value. The Case Study being developed for the Tsumadinskiy District and neighboring mountain region is intended not only to help inform the protection and sustainable

development of its socio-ecological heritage in the face of anthropogenic and climatic transformations but to provide a model for consideration elsewhere by those with similar concerns and challenges [11].

Within the framework of regional, republication and national environmental conservation and sustainable development objectives, the Conserving the Koisu program aims to:

- Enhance regional awareness of in the natural environment and the valorization of the region's unique and deep history identity and of the needs and potential benefits of conserving and reviving productive socio-ecological relationships in the face of negative anthropogenic impacts
- Contribute to the articulation of initiatives to underpin the Tsumadinskiy District's development in terms of income and revenue generation opportunities, by ensuring that any use of natural resources is equitable and sustainable.

The project will build on regional initiatives which have already been undertaken to protect and sustainably develop the ecological resources of the region, in large part arising from the dedicated collaborative work of the Tsumadinskiy District administration and the specialist ecological and biological competencies of the school of the settlement of Verkhnee Gakvari which have already resulted in two major government-supported conferences dedicated to these issues involving both the Tsumadinskiy and neighboring high mountain districts.

2021-2023: The first phase of the program is one of intensive district-wide multidisciplinary scientific research into relevant aspects of the regional natural environmental and tangible and intangible cultural heritages and their conservation needs. Existing data about the district and neighboring region, both published in the scientific literature and the rich as-yet unpublished information developed by scholars in local communities, will be reviewed and systematized as a basic internet-accessible program resource.

2024-2025: On the basis of the information gathered in the first phase, proposals will then be developed for the subsequent phase to advance specific concrete pilot projects directed at creating a methodological basis for implementing the core program objectives at the district level.

Longer term potential outcomes of the program could be the nomination of the headwaters region of the Andiiskoe Koisu as a region of global significance to mankind as a UNESCO World Heritage site (cultural landscape category), Geopark (Global Geoparks Network) or UNESCO Biosphere Reserve.

The project is led by Professor Guy Petherbridge, Director, Caspian Centre for Nature Conservation of Dagestan State University's Institute of Ecology and Sustainable Development in close consultation with representatives of regional communities and stakeholders who have been actively engaged in researching and supporting their region's heritage resources for many years. Almost every community in the district is notable for the activity of dedicated, enthusiastic and highly educated local specialists in a range of disciplines and interests who constitute a fundamental program resource.

The project also draws on a range of international and regional (i.e. Caucasus, Caspian) collaborative scientific and institutional resources in related disciplines, particularly those concerned with research into mountain

environments and the sustainability of mountain communities, such as those of the International Union for the Conservation of Nature. These include those undertaken in the European Alps and the Transcaucasus and particular in adjacent Georgia, where substantial advances have been made in developing nature conservation and heritage tourism based on specialist research in the Andiiskoe Koisu alpine source waters province of Tusheti. The project also draws on related initiatives in states of the high-altitude south-facing macro-slopes of the Himalayas, whose environments and traditional agro-pastoral systems have many remarkable similarities with those of the Tsumadinskiy and neighboring high mountain regions in Dagestan.

#### *DSU Summer Field Faculty, Tsumadinskiy district*

The format of the "University of the People" Summer Field Faculty will build on and support the outcomes of research data gathered and analyzed through the "Conserving the Koisu" project which will identify the ecological and cultural heritage resources of the Tsumadinskiy District, local expertise and initiatives directed at responding to the management needs and development potentials of these resources, as well as human resource development needs.

It is planned that the Summer Field Faculty which undertakes the following activities will be established at a residential centre of operations at an existing tourist base established in the Tsumadinskiy District near Khushtada (near the district administrative centre of Agvali). Lectures and workshops may take place in the facilities of the Tsumadinskiy District administration in Agvali.

This faculty will operate for a four-six week period and will be equipped with appropriate lecture facilities. It will be staffed on a rotational basis by specialists from Dagestan State University, as well as by those from other institutions. Some of these will be engaged in regional ecological, cultural heritage and linguistic research and documentation activities, while others will be engaged in providing courses tailored towards the education of both local inhabitants and scientist and students from other parts of Dagestan and Russia. Local historians and other specialists will also be engaged in teaching. Lectures and workshops may take place in the facilities of the Tsumadinskiy District administration in Agvali. Courses may include field work in the natural environment areas sites of cultural heritage significance in the district.

#### **CONCLUSION**

The "University of the People" initiative, as implemented by the Institute of Ecology and Sustainable Development of Dagestan State University and its regional community partners is intended to reinforce, promote and grow DSU's position as a "public good" – a core educational resource whose goal is to be acknowledged throughout the community as a focal point for the development, prosperity and well-being of the citizens and residents of the Republic of Dagestan.

Implementation of the University of the People concept has the potential to effectively harness the vast resources of traditional knowledge of individuals and local bodies in regional sustainable development by providing communities with concrete support and interaction of university specialists and educators in ecology and sustainable development. It is hoped that the program will stimulate and enable members of the community to themselves attain tertiary qualifications in these fields,

who, in turn, will create a future knowledge resource for continuing local applications of sustainable development principles.

The concept has potential for application to other societies in the Caucasus and Caspian regions which share similar histories and challenges. It is hoped it may serve as a model for consideration by the Association of Universities of Caspian Region States for broader application by its members to activities in ecology and sustainable development education. It is intended to be complementary to the regional educational initiatives in advancing environmental management and awareness being currently developed on behalf of the Association in cooperation with the United Nations Development Program. It is also intended to serve as a contribution to the International Partnership for the Satoyama Initiative towards the better understanding of the dynamics of viable traditional relationships between society and the environment in sustainable development for application to solutions to negative anthropogenic and climate impacts at the global level.

## REFERENCES

1. Campagnucci L., Spigarelli F. The Third Mission of the university: A systematic literature review on potentials and constraints. *Technological Forecasting and Social Change*, 2020, vol. 161, 120284. DOI: 10.1016/j.techfore.2020.120284
2. Schmidt N.S. A European framework for community engagement in HE? *University World News* 22 April, 2020. Available at: <https://www.universityworldnews.com/post.php?story=202004211448457> (accessed 09.10.2021)
3. Bardaglio P., Putman A., eds. Boldly Sustainable: Hope and Opportunity for Higher Education in the Age of Climate Change, *National Association of College and University Business Officers* (NACUBO), Washington D.C., 2009, 232 p.
4. Carayannis E.G., Campbell D.F.J. Triple helix, quadruple helix and quintuple helix and how do knowledge, innovation and the environment relate to each other? : A proposed framework for a trans-disciplinary analysis of sustainable development and social ecology. *International Journal of Social Ecology and Sustainable Development*, 2010, vol. 1, iss. 1, pp. 41-69. DOI: 10.4018/jesd.2010010105
5. Myers N., Kent J. The Citizen is Willing, but Society Won't Deliver: The Problem of Institutional Roadblocks. *International Institute for Sustainable Development*, Winnipeg, 2008, 205 p.
6. OECD (Organisation for Economic Co-operation and Development). The Response of Higher Education Institutions to Regional Needs. OECD Publishing, Paris, 1999.
7. Puuka J. Mobilising higher education for sustainable development – lessons learnt from the OECD study. *Proceedings of the 4th International Barcelona Conference on Higher Education*, Vol. 7, Higher education for sustainable development, Global University Network for Sustainable Development. 2008. Available at: [www.guni.rmiess.net](http://www.guni.rmiess.net) (accessed 07.10.2021)
8. Sedlacek S. The role of universities in fostering sustainable development at the regional level. *Journal of Cleaner Production*, 2013, vol. 48, pp. 74-84. DOI: 10.1016/j.jclepro.2013.01.029
9. Yarime M., Trencher G., Mino T., Scholz R. W., Olsson L., Ness B., Frantzeskaki N., Rotmans J. Establishing sustainability science in higher education institutions: towards an integration of academic development, institutionalization, and stakeholder collaborations. *Sustainability Science*, 2012, vol. 7, iss. 1, pp. 101-113. DOI: 10.1007/s11625-012-0157-5
10. Trencher G., Yarime M., McCormick K., Doll C., Kraines S., Kharrazi A., Beyond the Third Mission: exploring the emerging university function of co-creation for sustainability. *Science and Public Policy*, 2014, vol. 41, iss. 2, pp. 151-179. DOI:10.1093/scipol/sct044
11. Petherbridge G., Ismailov M.M., Ismailov S.M., Rabadanov M.K., Gadzhiev A.A., Teymurov A.A., Rabadanov M.R., Daudova M.G., Abdulaev A.M. Verkhnee Gakvari: The contribution of adat, religious beliefs and public education to collective environmental management in an agro-pastoral community in the Dagestan high Caucasus. *South of Russia: ecology, development*, 2021, vol. 16, no. 3, pp. 142-179. DOI: 10.18470/1992-1098-2021-3-142-179
12. Aburakhmanov G.M., ed. *Ekologo-ekonomicheskii potentsial i ustoichivoe razvitie Dakhadaevskogo raiona (ekologicheskii pasport)* [Ecological-Economic Potential and Sustainable Development of the Dakhadaevskiy District (Ecological Passport)]. Makhachkala, Eco-press Publ., 2016, 296 p. (In Russian)
13. Aburakhmanov G.M., ed. *Ekologo-ekonomicheskii potentsial i ustoichivoe razvitie Kizilyurtovskogo raiona i goroda Kizilyurt (ekologicheskii pasport)* [Ecological-Economic Potential and Sustainable Development of the Kizilyurt District and the City of Kizilyurt (Ecological Passport)]. Makhachkala, Eco-press Publ., 2016, 296 p. (In Russian)
14. Aburakhmanov G.M., ed. *Ekologo-ekonomicheskii potentsial i ustoichivoe razvitie Untsukul'skogo raiona (ekologicheskii pasport)* [Ecological-Economic Potential and Sustainable Development of the Untsukul'skiy District (Ecological Passport)]. Makhachkala, Eco-press Publ., 2018, 296 p. (In Russian)
15. Abdurakhmanov G.M., Bekshokova P.A., Gabibova P.I., Kadiyeva D.I., Nurmagomedova S.G. Study of the quality of life of the inhabitants of the municipality "Kizilyurt District", Republic of Dagestan. *South of Russia: ecology, development*, vol. 11, no. 3, pp. 9-23. (In Russian) DOI: 10.18470/1992-1098-2016-3-9-23
16. Abdurakhmanov G.M., Guseynova N.O., Prokopchik S.V. Environmental education as a system-forming factor in the concept of sustainable development (the example of Dakhadaevskiy District, Dagestan. *South of Russia: ecology, development*, 2016, vol. 11, no. 3, pp. 214-230. (In Russian) DOI: 10.18470/1992-1098-2016-3-214-230
17. Petherbridge G., Ismailov M.M., Ismailov S.M., Rabadanov M.Kh., Gadzhiev A.A., Teymurov A.A., Saipov D.M., Rabadanov M.R., Daudova M.G., Abdulaev A.-G.M. The socio-ecological production landscapes of three ethnolinguistic enclaves in the Dagestan high Caucasus. Sustaining a multi-millennial agro-pastoral continuum - the example of Verkhnee Gakvari. *International Partnership for the Satoyama Initiative*. 2021. Available at: [https://satoyama-initiative.org/case\\_studies/the-socio-ecological-production-landscapes-of-three-ethnolinguistic-enclaves-in-the-dagestan-high-caucasus-sustaining-a-multi-millennial-agro-pastoral-continuum-the-example-of-verkhnee-gakvari/](https://satoyama-initiative.org/case_studies/the-socio-ecological-production-landscapes-of-three-ethnolinguistic-enclaves-in-the-dagestan-high-caucasus-sustaining-a-multi-millennial-agro-pastoral-continuum-the-example-of-verkhnee-gakvari/) (accessed 10.12.2021)

**AUTHOR CONTRIBUTIONS**

Murtazali Kh. Rabadanov, as Rector of Dagestan State University posited the challenges and needs of an effective new approach to providing effective support for community engagement and authorised the proposed policy. Guy Petherbridge formulated the central strategy and wrote the core text. Alimurad A. Gadzhiev, Daitbek M. Saipov, Abdulgamid A. Teymurov and Murtuzali R. Rabadanov further refined the concept and contributed to the text. Madina G. Daudova edited and formatted the article for publication. All authors are equally responsible for plagiarism, self-plagiarism and other ethical transgressions.

**КРИТЕРИИ АВТОРСТВА**

Муртазали Х. Рабаданов, как ректор Дагестанского государственного университета, обозначил проблемы и необходимость эффективного нового подхода к обеспечению действенной поддержки взаимодействия с общественностью и одобрил предложенную политику. Гай Петербридж сформулировал основную стратегию и написал основной текст статьи. Алимурад А. Гаджиев, Даитбек М. Саипов, Абдулгамид А. Теймуров и Муртузали Р. Рабаданов доработали концепцию и внесли свой вклад в написании статьи. Мадина Г. Даудова редактировала и форматировала рукопись перед публикацией. Все авторы в равной степени несут ответственность при обнаружении плагиата, самоплагиата или других неэтических проблем.

**NO CONFLICT OF INTEREST DECLARATION**

The authors declare no conflict of interest.

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